

## **Altimetry Session Summary**

Chair: Frank Lemoine

With the successful return of data on missions such as Mars Global Surveyor, Clementine, Near Earth Asteroid Rendezvous (NEAR), and ICESAT, laser altimeters have been revealed as an essential tool for planetary exploration and Earth monitoring. This session included three papers on aspects of laser altimetry and a fourth paper demonstrating laser communications. Michaelis et al. reviewed the design for BELA, or the Bepi-Colombo Laser Altimeter. This instrument, onboard the Bepi-Colombo spacecraft would globally map Mercury with a 1 m /10 Hz instrument (100 m footprint, 300 m spacing) starting in 2019. Degnan et al. discussed second-generation photon counting imaging lidars. Second generation systems have flown on aircraft (1 km altitude) providing 15-20 cm resolution and contiguous coverage. Future systems could provide high-resolution topographic mapping even from orbital altitudes. Jirousek et al. presented the design of a timing system technology demonstration with sub ns resolution. The range gate delay width was 40 ns; the repetition rate was 24 Hz max, and the unit mass was 2.5 kg. The system was based on tested technology and developed in less than 3 months. Burris et al. presented the results of a demonstration of laser communications at sea. Live video and other data were transmitted on a 125 Mbps fast Ethernet ship-to-ship link over distances of up to 11 nautical miles.